

What is claimed is:

1. A display system using a hologram pattern liquid crystal comprising:

5 a plurality of first electrodes formed in line in the same direction;

a plurality of second electrodes formed in line in a direction perpendicular to the first electrodes;

liquid crystals having hologram patterns formed in a pixel area between the first and second electrodes;

10 an optical waveguide for transferring light to the pixel area; and

a light source, located in a side area of the optical waveguide, for generating the light.

15 2. The display system of claim 1, further comprising:

a driving unit for driving the first and second electrodes; and

a control unit for controlling the driving unit in accordance with a video signal inputted from the outside.

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3. The display system of claim 1, wherein the first and second electrodes are transparent electrodes.

4. The display system of claim 1, wherein the hologram pattern of the liquid crystal which is formed in one pixel is different from the hologram pattern of the liquid crystal which is formed in its neighboring pixel.

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5. The display system of claim 1, wherein one pixel is divided into first, second and third sub-pixels, and the hologram patterns of the liquid crystals formed in the respective sub-pixels are different from one another.

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6. The display system of claim 5, wherein the liquid crystal of the first sub-pixel adjusts a quantity of transmitted light of a red light, the liquid crystal of the second sub-pixel adjusts a quantity of transmitted light of a green light, and the liquid
15 crystal of the third sub-pixel adjusts a quantity of transmitted light of a blue light.

7. The display system of claim 1, wherein the liquid crystal comprises liquid crystal molecules having the hologram pattern
20 and a monomer, and the liquid crystal molecules and the monomer are periodically arranged and have a shape of a band.

8. The display system of claim 7, wherein the hologram pattern is a band-shaped interference pattern formed by a phase

difference between a laser reference light and the laser light which are irradiated on a mixed liquid of the liquid crystal molecules and the monomer.

5 9. The display system of claim 1, wherein the light source is one of a high-voltage mercury lamp, a metal halide lamp, and a white LED.

10 10. The display system of claim 1, wherein one light source is provided, and a length of the light source is the same as a length of a side face of the optical waveguide.

15 11. The display system of claim 1, wherein plural light sources are provided, and the respective light sources are arranged corresponding to cores of the optical waveguide.

12. The display system of claim 1, wherein the optical waveguide is located on a lower part of the first electrode.

20 13. The display system of claim 1, wherein the light source is located in a side area of the optical waveguide, and a reflecting mirror is located on the other side face of the optical waveguide.

14. The display system of claim 1, wherein the optical waveguide has one core for propagating the light, and an area of the core is the same as an area of the display panel having the pixels formed thereon.

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15. The display system of claim 1, wherein the optical waveguide has plural cores for propagating the light, and the respective cores are formed in the same direction so as to correspond to the first electrodes.

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